
1. An AC-DC converter comprising:

- a) an AC source providing an alternation of a positive voltage, a negative voltage, and a dead time during which the impedance of said source is substantially zero;
- b) a bridge having a first, a second, a third, and a fourth rectifier, said bridge having a first input terminal, a second input terminal, a first output terminal, and a second output terminal; wherein the first rectifier is connected between the first input terminal and the first output terminal, a cathode of the first rectifier being connected to said first output terminal, wherein the second rectifier is connected between the second input terminal and the first output terminal, a cathode of the second rectifier being connected to the first output terminal, wherein the third rectifier is connected between the second input terminal and the second output terminal, a cathode of the third rectifier being connected to the second input terminal, and wherein the fourth rectifier is connected between the first input terminal and the second output terminal, a cathode of the fourth rectifier being connected to the first input terminal; and
- (c) an inductor connected between said source and said first input terminal.

4. The converter of claim 1, wherein said source is adapted to cause current flowing through said inductor to reach zero before voltage produced by said source changes its polarity.

5. The converter of claim 1, wherein said source is adapted to cause current flowing through said inductor to not reach zero before voltage produced by said source changes its polarity.

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6. The converter of claim 1, wherein said source is adapted not to change its polarity until after current through said inductor reaches zero and until voltage across the rectifiers which will conduct on the next cycle reaches zero.

7. The converter of claim 1, further including a bi-directional switch connected between said first input terminal and said second input terminal, said bi-directional switch being responsive to a control voltage synchronized with said source.

— Please add new claims 8 - 18 as follows:

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8. The converter of claim 1, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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9. The converter of claim 2, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said

primary winding during said dead time to provide said substantially zero impedance.

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The converter of claim 3, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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The converter of claim 4, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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The converter of claim 5, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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The converter of claim 6, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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The converter of claim 7, wherein said source includes a transformer having a primary winding, a secondary winding connected to said inductor, and a switching circuit for shorting said primary winding during said dead time to provide said substantially zero impedance.

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15. A method for converting AC to DC, comprising providing the apparatus of claim 8 *36* and shorting said primary winding during said dead time with said switching circuit to provide said substantially zero impedance.

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16. A method for converting AC to DC, comprising providing the apparatus of claim 4 and causing said current flowing through said inductor to reach zero before said voltage changes its polarity.

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17. A method for converting AC to DC, comprising providing the apparatus of claim 5 and causing said current flowing through said inductor to not reach zero before said voltage changes its polarity.

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18. A method for converting AC to DC, comprising providing the apparatus of claim 6 and causing said source not to change its polarity until after said current reaches zero and until said voltage reaches zero.

REMARKS

This is in response to the Office Action mailed April 4, 2002. Accordingly, a petition to extend the time for response one month accompanies this Amendment, together with the required fee. Claims 1 and 4 - 7 have been amended for cosmetic reasons. New claims 8 - 19 have been added.